



Instructional Guide:

Planning, Designing, and Executing Sustainable C&D Waste Management in Army Projects

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Introduction

Subject

ACSIM Policy Memorandum - Sustainable Management of Waste in Military Construction, Renovation, and Demolition Activities, 06 February 2006 (*Requires 50% minimum diversion of construction and demolition (C&D) waste, by weight, from landfill disposal criteria in all contracts awarded after 06 March 2006.*)

Purpose

The purpose of this Interactive Training Module is to describe a process for incorporating the diversion of construction and demolition (C&D) building debris from landfill through reduction, reuse, and recycling into construction, demolition, or renovation project contracts.

Applicability

- a. Applies to all U.S. Army facilities engineering activities including construction, renovation, and demolition projects carried out under the Military Construction (MILCON) Army, MILCON Army Reserves, MILCON National Guard Bureau, Army Family Housing Construction, Facilities Reduction Programs(FRP), and installation Operation and Maintenance (O&M) programs.
- b. Applies to OCONUS installations and facilities where US Forces are permanently garrisoned and ACSIM has operational control over property in the Army real property inventory. This would include all of USPACOM and most of USEUCOM with the exception of Bosnia-Herzegovina, Kosovo, and Macedonia.
- c. Applies to BRAC projects.
- d. Applies to all unawarded contracts and solicitations issued 30 days after the date of the memorandum (06 March 2006). For MILCON (MCA & AFH-C) projects in the FY08 program and beyond, this policy will be universally applied. For MCA projects in earlier year programs (FY06 and FY07), if less than 35% design complete, this policy shall apply. For all other projects, project and program managers are encouraged to apply the guidance on a case by case basis. For Facilities Reduction Program (FRP) and Operation and Maintenance (O&M) funded projects, apply these requirements when least disruptive to the acquisition process.

References

- a. Deputy Assistant Secretary of the Army for Installations and Housing memorandum, Sustainable Design and Development Policy Update – SPiRiT to LEED Transition, 05 January 2006 (Announces transition from SPiRiT rating to LEED system as of FY08 Milcon program. Sets LEED Silver as the minimum sustainability rating for vertical New Construction projects.)
- b. ACSIM, Military Construction Transformation Execution, 01 July 2005 (Establishes MILCON Transformation as a way to execute military construction in an expeditious

manner; reducing cost by taking maximum advantage of existing industry practices and increasing reliance on Standard Designs.)

- c. Army Regulation (AR) 420-49, Utility Services, Chapter 3: Solid Waste Management, 19 September 2005, (Provides basic Army policy on solid waste management and recycling.)
- d. Army Strategy for the Environment, October 2004 (Establishes the Army vision for meeting the mission today and in the future by making sustainability the foundation for the strategy.)
- e. ACSIM, Implementation of Solid Waste Annual Reporting (SWAR), 11 January 1999
- f. AR 200-1, Environmental Protection and Enhancement, Chapter 5 – Hazardous and Solid Waste Management, 21 February 1997, (Provides basic Army policy on solid waste management and recycling.)

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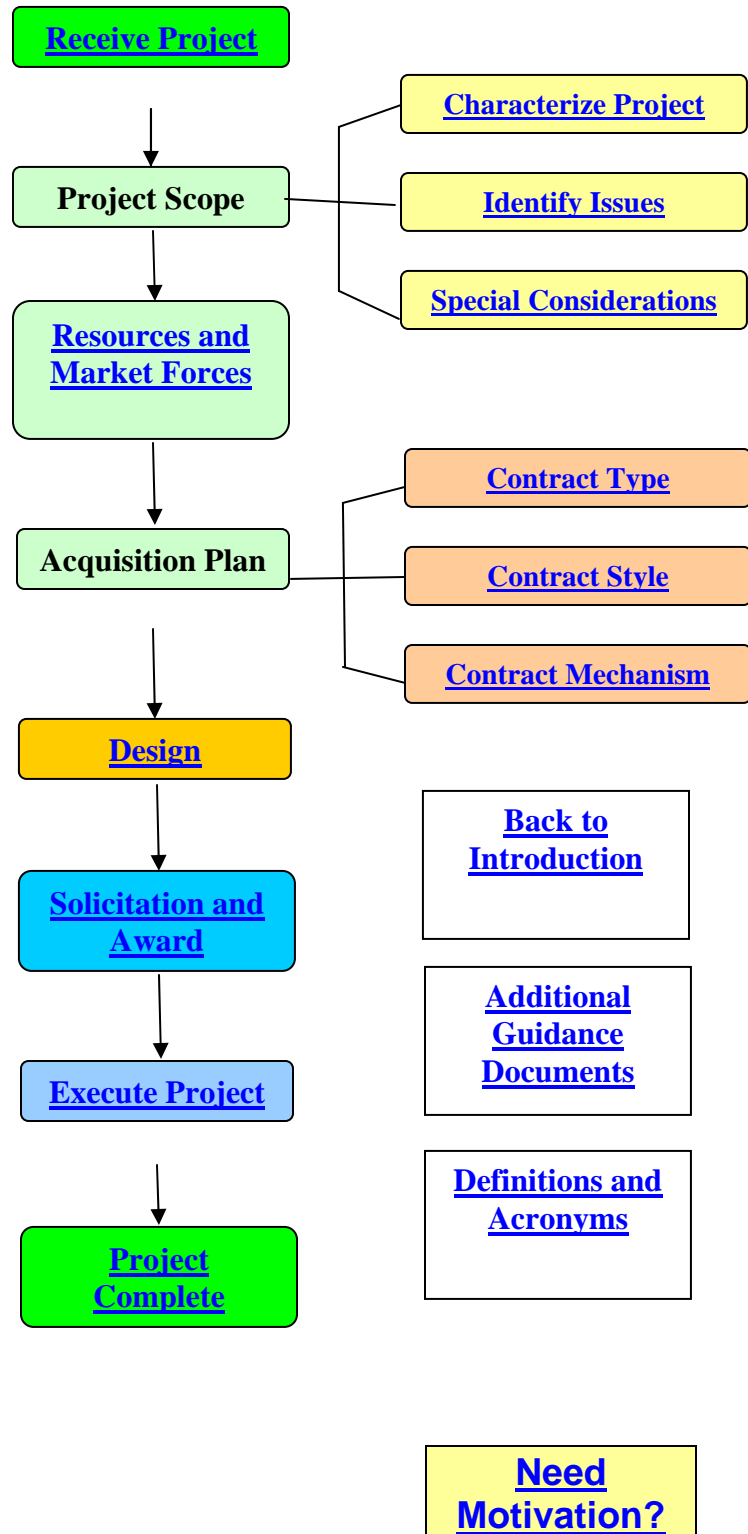
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Process Flow

The objective of this training module is to describe a process for incorporating the diversion of construction and demolition (C&D) building debris from landfill through reduction, reuse, and recycling into construction, demolition, or renovation project contracts.

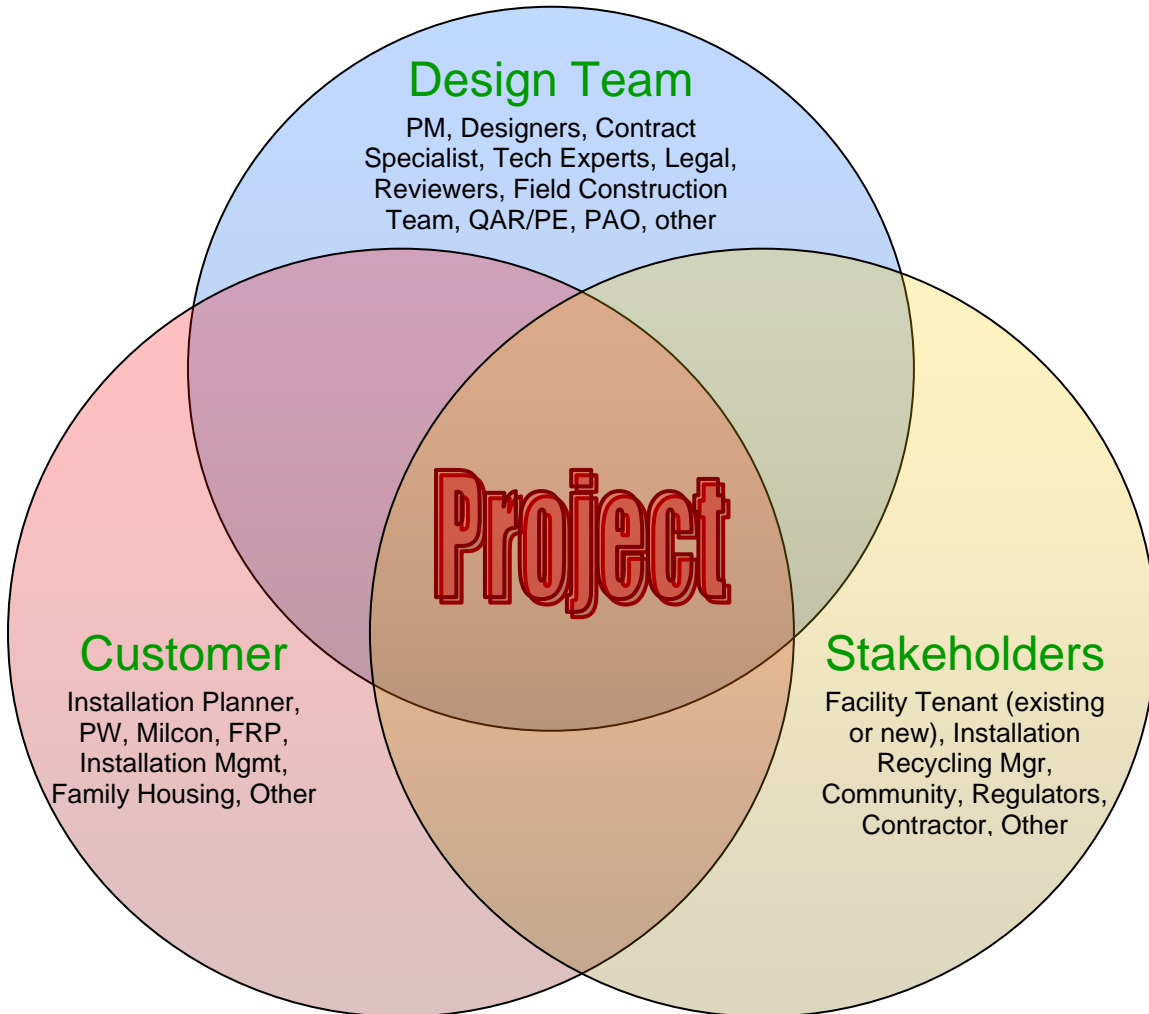
This training module is not intended to produce a new process or system, but is designed to work within the systems already existing within the installation or servicing agency.

The key to making this process work is to identify what you have and figure out how to achieve your project goals within that system.



Project Delivery Team

Development and Relationships



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Characterize Project

Decision Makers	Factors/Decisions	Impacts
PM Planner Designer	Renovation, Full or Partial Demo, New Construction Program Amount/Budget Funding Source/Authority Schedule Number of Buildings Type of Buildings Condition of Buildings	Workspace Limitations, Building Occupancy Building Occupancy Funding Constraints Sequencing and Time Constraints Amount of Material Available for Diversion, Available Resources

Renovation, Full or Partial Demo, New Construction

- How does the demolition work need to be sequenced with new construction occurring within the same footprint (none, must precede, must proceed, multi-phased)?
- How complex is the project (demo and new construction, many construction tasks, one building vs. many buildings/campus)
- Will the building be occupied during demolition?
- Will new construction be occurring at the same time as demolition?
- Will the workspace be constrained?
- What are the site conditions?
 - o Ease of access to the material
 - o Lay down space to segregate material (work space allowances/limitations)

Program Amount (PA) and Funding Source/Authority

- Identify the amount of MCA funds available (PA). MCA Funds can only be spent on tasks identified in the DD 1391. MCA Funds cannot be used to pay for surveys, hazmat abatement, contaminated soil abatement, or other environmental condition unless it is specifically identified in the DD 1391 (ACSIM Memo, Environmental Contaminants on Milcon sites, 12 April 2002).
- Will OMA/OPA funds be needed to support the Milcon project. OMA and OPA Funding Tails can be acquired from HQDA to be used to supplement MCA funds to cover those tasks not covered by the MCA funds (ACSIM Memo, Resolutions Responsibility Issues Resulting from the Establishment of IMA, 16 June 2005).

Schedule

- Does the demolition work need to be sequenced with new construction occurring on the same site?
- Does the demolition work need to be sequenced with the new construction oversight activities?
- When the buildings are available for demo (when will the installation turn over the keys)?
- When is the site required to be cleared?
- Season of the year - weather constraints?

Number of Buildings, Type of Buildings, and Condition of the Buildings

- Is this a Large project (many buildings/campus) vs. small project (few buildings)?
- Who will own the materials
 - o Installation
 - o Contractor
 - o Private Bidder
- How much potentially divertible material (C&D waste) will be entering the local resources/market for salvage, reuse, and/or recycle?
 - o Will too much material overwhelm the markets?
 - o Is there too little material to be economically feasible to salvage?
 - o What is the market value or tax donation value of the materials (depends on condition, age, and quantity)?
- What types of material (C&D waste) will be entering the local resources/markets for salvage, reuse, and/or recycle?
 - o Wood
 - o Masonry
 - o Metal
 - o Attached/Composite Items (electrical and plumbing fixtures, windows, doors, hardware, etc.)
 - o Petroleum and non-hazardous lead-contaminated soil

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Identify Project/Site Issues

Decision Makers	Issues	Impacts
PM Planner Designer	<p>Footprint Demolition</p> <p>Separate Demolition and New Construction Contracts or both combined under New Construction</p> <p>Occupant/Tenant Vacating Schedule</p> <p>Environmental Issues</p> <p>Historical or Cultural Resource</p>	<p>Schedule</p> <p>Demo Contractor as a sub or a prime, Single or two contracting actions</p> <p>Schedule</p> <p>Contractor risks and liabilities, Funding sources, Disposal/diversion requirements/opportunities</p> <p>Special handling, Project scope</p>

Footprint Demolition

- Which buildings on the demolition list are within the footprint of a new construction project?
- Is the new construction on a tight schedule and does this affect the timing/sequencing of the demolition?
- Is the non-footprint demolition under the same time schedule as the footprint demolition associated with the new construction?

Demo Separate or Combined with New Construction

- Will the demolition and new construction be contracted as separate actions or combined under the new construction contract?
- Will coordination between the demolition contractor and the new construction contractor be required?
- Is it better for the project to have control over both a prime demolition contractor and a prime new construction contractor or is working with a single prime preferred?
- Is a construction field team able and/or willing to cope with the difficulties surrounding the enforcement of two contracts or the difficulties involved with motivating a prime contractor to manage their subs?

Occupant/Tenant Vacating/Occupation Schedule

- Can/should the non-footprint demo be carried out after the completion of the new construction project?
- Will the tenant's schedule for vacating the building affect the schedule for demolition or new construction?
- Will the tenant occupy the building during construction and demolition?

Environmental Issues

- Asbestos-containing material
- Lead-containing material
- PCB-containing material
- Fluorescent Lamps
- Mercury Switches
- Items with low-level radioactive components (fire alarm systems, etc.)
- Ozone-depleting substances
- USTs/ASTs
- Hazardous and/or non-hazardous lead-contaminated soil
- Petroleum-contaminated soil
- Other????

Historical or Cultural Resource

- Are any of the buildings on any historical preservation lists?
- Should any of the buildings be on any historical preservation lists
- Are there any historical or cultural elements of the building to be saved, salvaged, and/or reused?

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Special Considerations for Sustainable C&D Waste Management

What metrics will be used to determine the "success" of the project?

- Time/Schedule
- Budget
- Diversion Target
- Contractor adjusting the way they do business
- Increased awareness
- Local participation

Decision Makers	Considerations	Impacts
PM Planner Designer	Level of Understanding Level of Commitment Leadership Support Community Issues/Support	"Success" of a comprehensively planned, designed, and executed sustainable project.

What is the Level of Understanding within the Team?

- Does the team have the experience to plan, design, and execute a sustainable demolition project?
- Is additional training/assistance needed to educate the team, leadership, or the client?
- How steep is the learning curve for members of the team?

What is the Level of Commitment within the Team?

- Does the team have the commitment to plan, design, and execute a sustainable demolition project without compromising goals?
- When the going gets tough, will the team give up?

Is there Leadership Support?

- Does leadership support the planning, design, and execution of a sustainable demolition project?
- Will leadership support a planned, designed, and executed sustainable demolition project?

Are there Community Issues that Require Special Consideration?

- Selling items with lead-based paint to a particular community - do the people buying the material understand the health concerns associated with lead-based paint?
- Does the community perceive the Army as generating more waste or as a steward of its resources?

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Resources and Market Forces

Identify Resources

- Deconstructors
- Demolition Contractors with experience
- Salvagers
- Recyclers
- Non-Profit Organizations
- Brokers
- Public Auction
- Installation Reuse/Recycling Program
- Other???

Market Demands/Forces

- Number and Type of Resources Available
- Fees Associated with Resources
- Proximity of Resources to Project
- Population
- Local and Regional Supply and Demand
- Project Location
- Potential to Open New Market
- Landfill Conditions (tipping fees, distance, etc.)
- Condition and Quantity of Material
- Other???

Possible Materials to be Salvaged, Reused, Sold, or Recycled

- | | |
|--|---|
| <ul style="list-style-type: none"> • Asphalt, concrete, brick, crushed stone, and other clean masonry debris • Land clearing debris (vegetation, soil, wood/stick/chip/timber, etc.) • Metal (aluminum, copper, steel, etc.) • Doors, windows, and hardware • Serviceable plumbing fixtures and equipment • Serviceable heating and cooling equipment • Serviceable electrical components and light fixtures • Petroleum-contaminated soil • Non-hazardous lead-contaminated soil • Structural decorations (trusses, millwork, trim, flooring, etc.) • Asphalt/bituminous roofing | <ul style="list-style-type: none"> • Treated lumber • Carpet • Ceiling Tile • Membrane roofing • Fiberglass panels • Glass • Gypsum/plaster • Insulation • Plastic • Siding • Dimensional lumber |
|--|---|

Hierarchy of Preference for the Disposal of Material

- | | |
|------------|--------------------|
| 1. Reduce | 4. Compost |
| 2. Reuse | 5. Energy Recovery |
| 3. Recycle | 6. Landfill |

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Contract Type

Decision Makers	Contract Type		Impacts
PM Designer Contracting Legal Real Estate	Cost Reimbursable Fixed Price Firm Fixed Price	<p>Construction Services</p> <p>Other (non-profit, auction, etc.)</p>	<p>Higher Davis-Bacon labor rates</p> <p>Prevailing services wages, lower than Davis-Bacon</p> <p>Possibly exempt from prevailing and construction wages</p>

Construction

- Is demolition part of the new construction design? If so, contract must be a “Construction” contract.
- Subject to Davis Bacon regulations.
- Identify impact to insurance and bonding.

Services

- If the demolition is a stand-alone project or is not directly tied to any new construction, it can be awarded as a “Services” contract.
- Subject to prevailing wage regulations (Service Contract Act).
- Identify impact to insurance and bonding.

Other

- Non-profit organizations such as Habitat for Humanity, Job Corps, or other programs that offer on-the-job training or free labor.
- In certain regions/states, non-profit organizations that offer training programs or utilize free labor are not subject to either Davis Bacon or prevailing wage requirements.
- Identify impact to insurance and bonding.

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Contract Style

Decision Makers	Contract Style	Impacts
PM Designer Contracting Legal Real Estate	Specified Construction Specifications Performance Based Contract (PBC) Combination PBC/Specs	Contractor is told what to do and how it is to be done. Contractor identifies most cost effective means/methods/technology Contradiction between performance criteria and specified instructions

Specified Construction Specifications

- Means, Methods, and Technology are specified.
- Eliminates uncertainty by the government about how the project will be accomplished.
- Government is bound to the specs (either by what is in them or not in them).
- Incomplete specs lead to cost escalation through change orders and contract modifications.
- Means, Methods, and Technology specified are not necessarily the best-value solution.
- Government carries the responsibility for proper and complete project closeout.

Performance Based Contract

- Performance criteria for the contract are identified, not the Means, Methods, or Technology.
- Target goals/criteria are tied to budget and payments – goals not met, payment not made.
- Local and regional resources available to the project should influence performance criteria/goals. Criteria and goals must be attainable.
- PBC allows the contractor to identify the most cost effective, profitable, efficient means, methods, or technology available for the project. This usually results in some hybrid that combines traditional demolition, traditional deconstruction and any other methods in between.
- Factors other than lowest cost can be incorporated into the basis for contract award (diverted debris, life-cycle cost savings, community PR)
- Usually results in best-value solution.
- The contractor carries the responsibility for proper and complete project closeout.

Combination PBC/Specs

- Performance criteria for the contract are identified for tasks that the government does not want/need to control.
- Construction specifications are developed for those tasks that the government wants to control.
- Payment schedule can be either progress-based, criteria-based, or some combination.
- Responsibility of proper and complete project closeout is shared between the government and the contractor.

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Contract Mechanism

Decision Makers	Contract Mechanism	Impacts
PM Designer Contracting Legal Real Estate	<p>Open Solicitation</p> <p>Multiple Award/Task Order</p> <p>Small Business/Socioeconomic Programs</p> <p>8A Set Aside</p> <p>Sole Source</p>	<p>Most expensive contracting mechanism.</p> <p>Limits number of bidders to preselected contractors</p> <p>Low cost contracting mechanism</p> <p>Competed</p> <p>Does not encourage competitive bids.</p>

Open Solicitation

- Allows for evaluation of proposals on criteria other than cost (Best Value).
- Allows for the inclusion of incentives and/or disincentives.
- Most expensive contracting mechanism (internal cost to go through contracting branch).

Multiple Award/Task Order

- IDIQ, MARC, MATOC, JOC or any other contract that is already in place that has one or more preselected contractors that can be accessed via a task order.
- Contracts that have only one preselected contractor will require price negotiation. Does not encourage competitive bid.
- Contracts that have multiple preselected contractors can be awarded as Task Orders to the lowest bidder. This option encourages competitive bids.
- Contracts that have multiple preselected contractors can have simplified evaluation criteria (yes/no, go/no go) as part of the proposal evaluation.
- Depending how the base contract is set up, it may allow for the inclusion of incentives and/or disincentives.
- Easy, low cost contracting mechanism (internal cost to go through contracting branch).

Small Business/Socioeconomic Programs

- Allows for evaluation of proposals on criteria other than cost (Best Value).
- Allows for the inclusion of incentives and/or disincentives.
- Adds to the achievement of USACE target, Army target, DoD, and Statutory goals
- Higher contracting mechanism (internal cost to go through contracting branch).

8A Set Aside

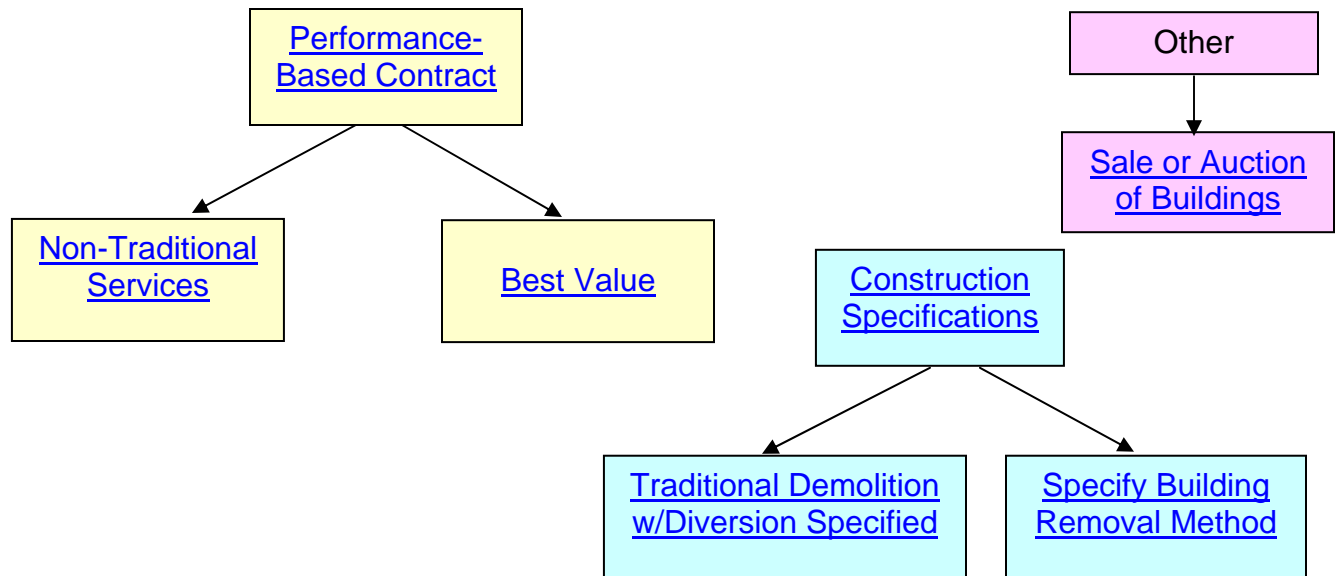
- Projects must be under \$3 million to be non-competed
- Does not encourage competitive bids.
- Requires price negotiations.
- Does not allow for evaluation of proposal other than cost.
- Depending how the base contract is set up, it may allow for the inclusion of incentives and/or disincentives.
- Adds to the achievement of USACE target, Army target, DoD, and Statutory goals
- Mid cost contracting mechanism (internal cost to go through contracting branch).

Sole Source

- Must be able to justify why the sole source selected is the only contractor to accomplish the project.
- Does not encourage competitive bids.
- Requires price negotiations.
- Does allow for evaluation of proposal other than cost (Best Value).
- Depending how the base contract is set up, it may allow for the inclusion of incentives and/or disincentives.
- Mid cost contracting mechanism (internal cost to go through contracting branch).

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Design Considerations



It is important to note that no single strategy for waste diversion is applicable to all buildings, construction types, locations, and projects.

- Each is applicable within different sets of project conditions and constraints.
- Each general approach has advantages, disadvantages, opportunities, and limitations.
- Variations are possible within each general approach, therefore each approach must also be adapted to the project goals.

The design should identify the environmental issues associated with the project.

- Documentation submittals (both waste management plans and final reports) are critical for all methods (type and quantity of material disposed, type and quantity of material diverted, destination of each type and quantity of material disposed and diverted).
- Any form of diversion, regardless of how it is designed and contracted, will take longer than traditional demolition. The greater the hand labor, material segregation, and material handling - the longer the time frame.

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Non-Traditional Building Removal Methods

Nonprofit organizations (Habitat for Humanity, NCCC/AmeriCorps) perform as general contractors or as subs to a prime construction contractor.

Non profit	Installation
<ul style="list-style-type: none">HfH has developed the capability to deconstruct wood-framed buildings and resell the salvaged materials through the service's ReStore network. Other organizations can be utilized in a similar method.Nonprofits may partner with local affiliates to build capabilities.Nonprofits will assemble a workforce, obtain construction management consultants, provide a site superintendent and subcontractors for tasks the workforce cannot perform.Volunteers receive deconstruction and safety training before beginning deconstruction activities.	<ul style="list-style-type: none">Required to abate the hazardous material.Should keep one building active to provide field office, training facility, potable water, field toilets, and a source of water for use by the nonprofit organization.Required to disconnect all the utilities.Responsible for the foundation and floor slabs.Oversight will focus on health and safety.Vesting title to salvaged and recycled materials for the nonprofit's use is critical to the feasibility of recovering and recycling materials.
Special Considerations	
<ul style="list-style-type: none">Nonprofits must be able to ensure that construction safety, occupational health, and insurance and bonding will be maintained.Typically need more than 7 buildings to make the project profitable for the organization.Building contents/materials are critical to alternative building removal methods (lumber, recently installed products and equipment are typically valuable materials).Sufficient lead-time must be allowed for the nonprofit to assemble resources (may require as much as 2 months lead time)	

This method allows for maximum reuse and recycling of building materials.

Fosters good community relations.

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Best Value

Contractor is selected through evaluation and acceptance of technical and price proposal, which provides best approach at best value.

An RFP is issued to solicit proposals for removing the buildings within identified performance criteria (does not specify means/method/technology).

Proposers offer a strategy or method that would be acceptable within the parameters of the RFP.

Contract is awarded to the proposer offering the best value for performing the work in terms of price and technical merit (priorities and preferences are defined in the RFP as evaluation criteria).

Additional advertising in local and regional media will also be beneficial to attract participation by businesses that may not normally monitor Government advertisements.

Vesting title to salvaged and recycled materials for the contractor's use is critical to the feasibility of recovering and recycling materials.

A contractor's incentive to salvage, sell, or recycle must be based on the potential economic return (sale proceeds or tax benefits).

Benefits	Negatives
<ul style="list-style-type: none">• Innovation and efficiency is encouraged.• Factors other than lowest cost can be incorporated into the basis for contract award.• Best value method chosen.	<ul style="list-style-type: none">• Scope of the building removal project must be sufficient to attract participation.• Time available to enact a contract must be sufficient to allow for the advertisement, proposal, and evaluation process (this can take longer than conventional competitive bidding.• Highest contracting action cost.

Prevailing economies and resources would allow the most favorable strategy to emerge.

This method mirrors the design/build and performance-based contracting methods the Army is now using.

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Sale or Auction of Buildings

Local interests bid competitively for buildings and/or salvage rights.

Fort McCoy Model	Fort Knox Model
<ul style="list-style-type: none">• Purchasers bid on the salvage rights to entire buildings.• Successful bidder signs a contract and makes payment to the Treasurer of the United States.• Installation removes all Hazmat before purchaser begins work.• Purchaser dismantles the building to the foundations, retaining salvaged material.• Installation provides receptacles for unwanted C&D debris.• Purchaser is responsible for removing the building materials except the foundation and floor slabs.• Installation removes foundation and floor slabs.	<ul style="list-style-type: none">• Installation removes all Hazmat before property is turned over to the Recycling Program.• Recycle Program sells the salvage/recycle rights to the parties performing the building removal.• Revenues are returned to the Recycle Program.• Process takes place in a 6-week window followed by Traditional Demolition.• Recycle Program administers the process and conducts public auctions.• Purchaser salvages materials and removes debris from the site.• Once salvage is complete, Recycle Program transfers property back to the Installation.• Installation contracts for Traditional Demolition to remove remaining debris.• Concrete, other masonry rubble, and any remaining metal is retained by the Demolition Contractor.

Contract includes requirements for safety training, period of performance, deposit requirement, disclaimers and hold harmless provisions, identification, site security and provisions for disposing of debris.

Contract usually requires the Purchaser to remove a minimum percent of the building material (typically 50% or better).

Requires widely publicized notices to attract maximum participation from the community. Participation in sales and auction increase over time as programs become better known.

Installations considering this method are cautioned to be patient with this method and to seek ways of enhancing community participation with each subsequent project.

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Traditional Demolition with Diversion Specified

Contract package will be a traditional package with construction specifications (UFGS for Army projects).

The contract will include requirements for recovering and recycling building materials (usually as a percent of C&D diversion by weight or volume).

However, no definitive materials, quantities, or methods are specified - requirement is expressed as a "Performance Criteria".

Percent diverted chosen would depend on the expenses involved and the status of the market place.

Salvageable or divertible materials may be identified, but not specifically required to be diverted.

It is also appropriate to identify, within the specifications, on-post locations or entities that may be available to accept reusable or recyclable materials.

Vesting title to salvaged and recycled materials for the contractor's use is critical to the feasibility of recovering and recycling materials.

A contractor's incentive to salvage, sell, or recycle must be based on the potential economic return (sale proceeds or tax benefits).

Appropriate locations for diversion language would be (UFGS specs need to be edited/adapted to the installation's own practices and formats):

- | | |
|-------------------------|---|
| • Scope/Summary of Work | • UFGS 00101 BID SCHEDULE |
| • Task Description | • UFGS 01025 MEASUREMENT AND PAYMENT |
| • RFP Work Statement | • UFGS 01335 SUSTAINABLE DESIGN AND CONSTRUCTION PROCEDURES |
| • Evaluation Criteria | • UFGS 01355 ENVIRONMENTAL PROTECTION |
| | • UFGS 01572 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT |
| | • UFGS 02220 DEMOLITION |

This method is a good way to blend both performance criteria and installation or project specified requirements into a contract.

This method does not mirror the design/build or performance-based contracting methods the Army is now using.

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Specified Building Removal Method

Contract package will be a traditional package with construction specifications (UFGS for Army projects).

The contract will specify requirements for a particular method of building removal, such as deconstruction.

It is strongly recommended to include on the bidder's list: salvagers, recycling firms, used building materials outlets, deconstruction contractors, and demolition contractors.

Additional advertising in local and regional media will also be beneficial to attract participation by businesses that may not normally monitor Government advertisements.

Net costs of removing the building and returning the site should be competitive to traditional demolition.

Initial costs will be higher, but should be offset by the value of the salvaged materials (sale proceeds or tax benefits).

Building contents and materials are critical to alternative building removal methods (lumber, recently installed products and equipment are typically valuable materials).

Vesting title to salvaged and recycled materials for the contractor's use is critical to the feasibility of recovering and recycling materials.

Appropriate locations for diversion language would be (UFGS specs need to be edited/adapted to the chosen building removal method):

- | | |
|---|--|
| <ul style="list-style-type: none">• Scope/Summary of Work• Task Description• RFP Work Statement• Evaluation Criteria | <ul style="list-style-type: none">• UFGS 00101 BID SCHEDULE• UFGS 01025 MEASUREMENT AND PAYMENT• UFGS 01335 SUSTAINABLE DESIGN AND CONSTRUCTION PROCEDURES• UFGS 01355 ENVIRONMENTAL PROTECTION• UFGS 01572 CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT• UFGS 02220 DEMOLITION |
|---|--|

This method allows for maximum reuse and recycling of building materials.

Accessibility to materials and the effort to salvage them affects net costs (easy to access items more valuable than difficult to reach items).

Specifying a single building removal method precludes options, and may not achieve the best economic or environmental results.

This method does not mirror the design/build or performance-based contracting methods the Army is now using.

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Hazardous Material and Lead-Based Painted Lumber

Hazardous Material	Lead-Based Paint Lumber
<ul style="list-style-type: none"> • Installation may perform the hazmat survey and/or abatement prior to award to the demolition Contractor. • Hazmat survey and/or abatement activities can be awarded to the demolition Contractor. • Hazardous materials are often hidden and only found after demolition has begun. Therefore, the Contractor must be alert to the presence of hazmat that may have been concealed and was not removed. • If necessary, disclosure statements for hazardous material can be included in the solicitation. • Some hazmat can be recycled (fluorescent lamps) or reused (non-hazardous lead-contaminated soil). • Hazmat includes, but not limited to, Asbestos-containing material, lead-containing material, items with PCBs/mercury/ozone-depleting or radiological substances/, petroleum-contaminated soil, lead-contaminated soil. • Occupational hazards associated with removal and handling hazardous materials must be addressed by the Contractor. Appropriate training and monitoring is required. 	<ul style="list-style-type: none"> • Is frequently cited reason for not salvaging the lumber (uncertainty about regulatory constraints and liability fears). • Used building materials do not fall under RCRA waste regulations until they enter the waste stream. • The Dept. of Housing and Urban Development (HUD) final rule Lead Requirements for Disclosure of Known LBP and/or LBP Hazards in Housing, requires the disclosure of the presence of lead when selling or renting target housing properties. • Used building material outlets, both commercial and nonprofit, commonly sell painted items, accompanied with a disclosure statement.

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Solicitation and Award

Contract practices for building removal that allows or requires salvage, resale, and recycling or alternative building removal methods should not differ significantly from a conventional demolition contract.

Building contents and materials are critical to alternative building removal methods (lumber, recently installed products and equipment are typically valuable materials).

Vesting title to salvaged and recycled materials for the contractor's use is critical to the feasibility of recovering and recycling materials.

Appropriate labor wages need to be identified (Davis-Bacon, Prevailing Wages, or use of training organizations or volunteer labor).

If the contracting mechanism allows, incentives and penalties may be utilized.

Solicitations for building removal projects should be developed to attract the necessary deconstruction, salvage, and recycling services.

Scheduling and advertising need match the type of contract and design being utilized - appropriate time and resources need to be available for selection of the appropriate services.

If source selection is based on other than cost, evaluation criteria must be identified in the solicitation and applied to each proposal by the source selection members.

Source selection members need to have appropriate awareness and commitment to the type of contract and design being utilized.

Other elements to help select the best contractor, with the best method, for the best value.....		
Job Walks/Contractor Q&A	Open House/Workshop/Education Opportunities	Allow/Encourage Contractors to engage community resources/salvagers/recyclers/deconstructors

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Project Execution

Once under contract, administering a building removal project will not differ fundamentally from any other construction project.

QA reps, Project Engineers, and other field construction team members must be completely aware of the requirements of the contract.

Project designers and engineers should take the time to include the field team during design, but at minimum, go through the design with them before field work begins.

The C&D diversion requirements require complete and total documentation - this documentation will need to be checked on a regular and consistent schedule. QA reps must be prepared to track and enforce documentation requirements.

If non-traditional service, such as Habitat for Humanity, is performing the work, emphasis should be given to monitoring the Health and Safety Management program.

QA reps overseeing project with environmental issues must have additional specialized training: Hazwoper, Asbestos Inspector, Lead Inspector, and Federal and state UST program.

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Project Completion

Myth: The project is complete when the construction is complete.

Truth: The project is complete only after everyone has the paperwork they need and the site has been officially turned over to the Installation.

- Closeout Submittals from Contractor are received and approved.
- As Builts approved and filed with the Installation and the project records.
- Solid Waste Report approved and filed with the Installation.
- UST/AST Closure Reports approved and filed with the Installation.
- HazMat Reports approved and filed with the Installation.
- Project records are archived.
- DD 1354 turned into Installation Real Property.
- Documented After Action Report/Lessons Learned - attended/contributed by the entire PDT (design/construction team, customers, and stakeholders).

Project is complete when the property is turned over to the Installation or New Construction Contractor as property ready to be developed.

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Additional Existing Guidance Documents

Alternatives to conventional demolition and landfilling have proven that diverting more than 50% of debris from the landfill is achievable and that alternative building removal methods can be executed at similar cost as traditional demolition.

Army Regulations

AR 200-1, Feb 1997, Environmental Quality – Environmental Protection and Enhancement
AR 420-49, Sept. 2005, Facility Engineering Utility Services (includes information on Solid Waste Mgmt)

http://www.army.mil/usapa/epubs/ACSIM_1.html

Public Works Technical Bulletins

PWTB 200-1-26, April 2005, Market Valuation of Demolition Salvage Materials
PWTB 200-1-27, Sept. 2004, Reuse of Concrete Materials from Building Demolition
PWTB 200-1-22, Nov. 2003, Army Solid Waste and Recycling Web Site (DENIX)
PWTB 200-1-24, Oct. 2003, Quantifying Waste Generated From Building Remodeling
PWTB 200-1-17, March 2003, Recycling Interior Finish Materials - Carpet and Ceiling Tiles
PWTB 200-1-23, March 2003, Guidance for the Reduction of Demolition Waste through Reuse and Recycling
PWTB 420-49-32, July 2001, Selection of Methods for the Reduction, Reuse, and Recycling of Demolition Waste
PWTB 420-49-30, Feb. 2000, Alternatives to Demolition for Facility Reduction
PWTB 420-47-05, Aug. 1994, Source Reduction Planning

http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215

Air Force C&D Guide

<http://www.afcee.brooks.af.mil/eq/programs/summary.asp?rscID=870>

Alameda County Waste Management Authority

<http://www.stopwaste.org/fsbuild.html>

Build Recycle.net

www.build.recycle.net

Building Deconstruction Consortium

<http://www.denix.osd.mil/denix/Public/Library/Sustain/BDC/documents.html>

Building Materials Reuse Association

www.buildingreuse.org

Building Savings: Strategies for Waste Reduction of Construction and Demolition Debris from Buildings

www.ilsr.org/recycling/buildingdebris.pdf

California Integrated Waste Management Board (CIWMB)

www.ciwmb.ca.gov/condemo/

City of Austin – Deconstruction and Green Building

<http://www.ci.austin.tx.us/sustainable/deconstruction.htm>

Construction Materials Recycling Association (CMRA)

www.cdrecycling.org

Deconstruction Guide for Military Installations

[http://kppc.org/resources/DoD%20Deconstruction/Presentations/DECON_guide%20\(final%2011-03-03\).pdf](http://kppc.org/resources/DoD%20Deconstruction/Presentations/DECON_guide%20(final%2011-03-03).pdf)

Deconstruction Institute

<http://www.deconstructioninstitute.com>

http://www.sustainability.army.mil/resources/libdocs_deconstruction/DeconstructionGuide.pdf

Denison University - Barney Green Renovation Project

<http://webby.cc.denison.edu/enviro/barney/highlights.html>

Directory of Wood-Framed Building Deconstruction and Reused Building Materials Companies

www.fpl.fs.fed.us/pubs.htm

Ft. Ord Military Base Pilot Deconstruction Project

www.fora.org/pilot.html

Greater Vancouver Regional District – Job-site Recycling Program

<http://www.gvrd.bc.ca/waste/bro/dlcgde.html>

Green Building Information Council of Canada

<http://greenbuilding.ca/>

GreenBiz – A Guide to Deconstruction

http://www.greenbiz.com/toolbox/tools_third.cfm?LinkAdvID=8494

Greening of the Presidio

<http://www.eren.doe.gov/femp/techassist/presidio.html>

GreenSpec

<http://www.buildinggreen.com>

Guide to Deconstruction

http://www.deconstructioninstitute.com/files/learn_center/45762865_guidebook.pdf

Guide to Deconstruction. U.S. HUD

www.huduser.org/publications/pdf/decon.pdf

Guide to Deconstruction: An Overview of Destruction With a Focus on Community Development Opportunities

<http://www.huduser.org/publications/destech/decon.html>

INFORM Reports: Building for the Future: Strategies to Reduce C&D Wastes in Municipal Projects

<http://www.informinc.org/>

Learning Center:

http://www.deconstructioninstitute.com/learning_center.php

National Association of Home Builder's Research Center

<http://www.nahbrc.org/builders/green/index.html>

OSHA Demolition Guidelines

<http://www.osha-slc.gov/SLTC/demolition/index.html>

Region 4 DOD/EPA/State P2 Partnership:

<http://wrrc.p2pays.org/DODPartnership/>

Reuse Development Organization

www.redo.org

Smart Growth Network – Series of Reports on Deconstruction

<http://www.smartgrowth.org/ISSUEAREAS/buildings.html>

State of GA DOD/EPA Sustainability Partnership:

http://www.ganet.org/dnr/p2ad/dod/dod_aboutus.html

State of GA DOD/EPA - Construction and Demolition Guide Sustainability Partnership:

http://www.ganet.org/dnr/p2ad/pdfs/chapter_4.pdf

Sustainability at University of British Columbia

http://www.sustain.ubc.ca/whatsnew_archive.html

Sustainable Architecture Compendium University of Michigan

www.umich.edu/~nppcpub/resources/compendia/architecture.html#ranr

U.S. Environmental Protection Agency

<http://www.epa.gov/epaoswer/non-hw/debris-new/pubs.htm>

WasteSpec

www.tjcog.dst.nc.us/cdwaste.htm

Wood Framed Building Deconstruction: “A Source for Lumber for Construction,” by Bob Falk, Forest Products Journal, March 2002,
<http://www.fpl.fs.fed.us/documnts/pdf2002/falk02a.pdf>

“Unbuilding - Salvaging the Architectural Treasures of Unwanted Houses” by Bob Falk and Brad Guy, 2007,
<http://www.fpl.fs.fed.us/documnts/pdf2002/falk02a.pdf>

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Definitions and Acronyms

ACM	Asbestos-Containing Material
AST	Aboveground Storage Tank
C&D	Construction and Demolition
FRP	Facility Reduction Program
Hazmat	Hazardous Material
IDIQ	Indefinite Delivery Indefinite Quantity
JOC	Job Order Contract
LCM	Lead-Containing Material
LCS	Lead-Contaminated Soil
MARC	Multiple Award Remediation Contract
MATOC	Multiple Award Task Order Contract
MCA	Military Construction Army
MILCON	Military Construction Program
OMA	Operation and Maintenance Army
PA	Program Amount
PCS	Petroleum-Contaminated Soil
PDT	Project Delivery Team
PBC	Performance Based Contract
PWTB	Public Works Technical Bulletin
RCRA	Resource Conservation and Recovery Act
Resources	Deconstructors, Salvagers, Recyclers, Brokers, Non-profit Organizations
RFP	Request for Proposal
Tenants	Occupant of Building
TO	Task Order
UFGS	Unified Facility Guide Specifications
UST	Underground Storage Tank

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